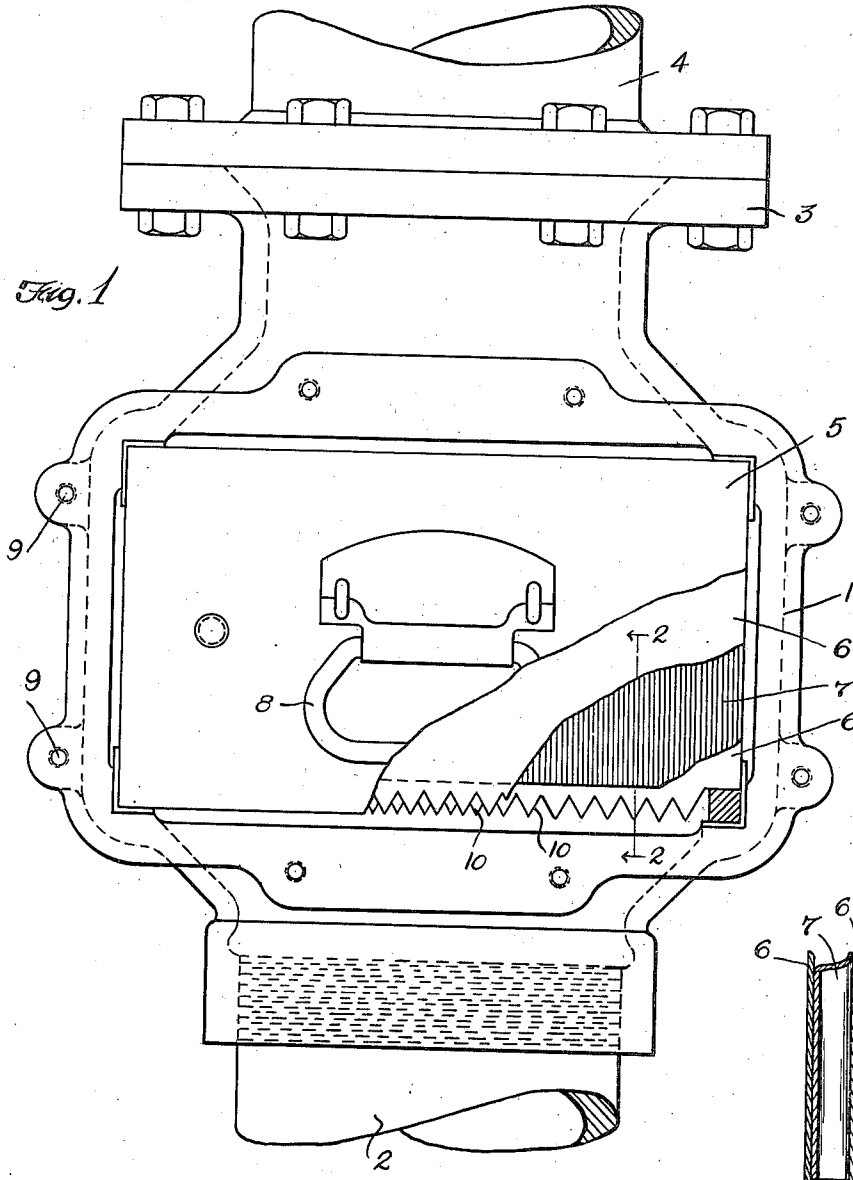
June 24, 1941. J. R. EDWARDS 2,247,225

FLAME ARRESTER

Filed May 18, 1937

Fig. 1



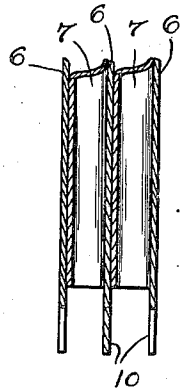
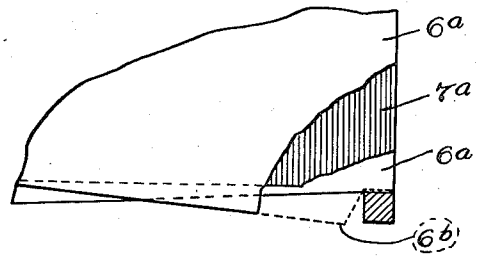


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE

2,247,225

FLAME ARRESTER

John R. Edwards, Pittsburgh, Pa., assignor to The Johnston & Jennings Company, Cleveland, Ohio, a corporation of Ohio

Application May 18, 1937, Serial No. 143,330

1 Claim. (Cl. 220—88)

The present invention relates to a novel improvement in a flame arrester construction, particularly suitable for installation on oil tank breather pipes. The general object and nature of my invention is to provide a flame arrester construction wherein condensed liquid, such as moisture and petroleum vapors, which deposit upon the surface of the walls of the flame arrester will be readily and promptly drained off therefrom, thus preventing clogging and obstructing the interior of the flame arrester.

The interior of a flame arrester is customarily occupied by a bank of plates or tubes whose walls are disposed in a direction parallel to the flow of gases through the arrester and in a vertical position. Moisture collecting upon the surfaces of these walls tends to flow by gravity and hang in drops on the bottom edges of the walls. In the event of freezing temperatures, this moisture, so collected on the bottom edges of the walls, will become frozen and not only obstruct the normal passage of gases through the arrester, but might also seriously damage the arrester due to expansion of the water upon freezing. Similarly, condensed petroleum vapors will collect on the bottom edges of the walls of the tubular or plate elements of the arrester, and although not susceptible of freezing, will still tend to clog the arrester and thereby increase its resistance to the flow of gases.

Therefore in order to eliminate this difficulty, my present invention contemplates the provision of a series of serrations or sharp pointed teeth on the bottom edges of the platelike or tubular elements, which will function to cause the collected liquids to drop off.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claim.

The annexed drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing—

Fig. 1 is a side elevational view of a flame arrester embodying the principle of my invention and with the cover plate removed showing the bank of plate-like elements with a portion thereof partially broken away; Fig. 2 is a vertical section of a portion of such flame arrester, the plane of the section being indicated by the line 2—2, Fig. 1; and Fig. 3 is a broken side elevational view corresponding with the lower right-hand portion of Fig. 1, but showing a modified construction.

The general design and construction of my flame arrester may be of the type as shown and described in U. S. Patent No. 1,735,261, issued November 12, 1929, to T. J. Calhoun, but it will be understood that the invention is adapted to be advantageously incorporated in flame arresters of different design and construction.

Referring more particularly to the drawing, the flame arrester consists of a housing or casing 1, threadably mounted at its bottom end to an oil tank breather pipe 2 and connected through the flange coupling 3 at its upper end to a lead-off pipe 4. A bank 5 of flame arresting elements is mounted in the interior of the casing 1. The elements which make up the bank 5 consist of vertically disposed, alternate flat plates 6 and corrugated plates 7. A handle 8 is attached to the bank 5 of plates so that the bank can be readily withdrawn and inserted into the interior of the casing 1, much in the manner of a drawer. A cover plate (not shown) is adapted to be attached to the side of the casing 1 and fastened thereto by means of suitable studs threadably engaging the tapped holes 9.

The bottom edges of the flat plate 6 are made in a serrated form comprising a series of V-shaped, sharp pointed teeth 10. The bottom edges of the corrugated plate 7 may also be made in such serrated form, but for ordinary purposes, the serration of the bottom edge of the flat plates only should suffice.

Thus it will be seen that the edges of the sharp teeth 10, being angularly inclined to the horizontal, function to conduct drops of collected liquid, such as condensed moisture or petroleum vapors, to the tip of the teeth 10 where such drops will fall off from the plates 6 down into the breather pipe 2 and thereby prevent any clogging or obstruction of the interior of the flame arrester. Furthermore, as best illustrated in Fig. 2, the flat plates 6 are displaced vertically, i. e., project downwardly further than the lower edges of the alternating corrugated plates 7. As a result of having the lower edges of the latter terminate short of the lower edges of such flat plates, irrespective of whether these be serrated or not, the collection of condensed liquid on the lower edges of the flat plates, rather than in the restricted passages formed between the corrugated plates and such flat plates, will be facilitated. In other words, it is to be understood that the lower edges of the flat plates need not be necessarily serrated.

Indeed, as illustrated by the modified construction shown in Fig. 3, it may be found advantageous in certain types or sizes of flame arrester to have the lower edges of the flat plates 6*a* straight but inclined from one side to the other. In such case the liquid collecting on the edges in question will tend to run therealong to the lower corners 6*b* and the drip from the plates will thus be carried to one side or the other of the casing 1. Preferably in this modified construction the lower edges of alternate plates will be inclined in opposite directions.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by the following claim or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

In a flame arrester, a plurality of juxtaposed plates formed to provide a multiplicity of substantially vertical passages, means for conducting the flow of gases and vapors through said passages, the lower edges of alternate plates projecting at a horizontally inclined angle and in opposite directions beyond the other plates, whereby condensed liquid is drawn away from such passages.

JOHN R. EDWARDS.